REMARKS

In the non final Office Action, the Examiner noted that claims 1-19 and 23-27 are pending in the application and that claims 1-19 and 23-27 stand rejected. By this response, claim 1 is amended and claims 2-19 and 23-27 continue unamended.

It is to be understood that the Applicants, by amending the claims, do not acquiesce to the Examiner's characterizations of the art of record or to Applicants' subject matter recited in the pending claims. Rather, the Applicants have amended claim 1 provide minor grammatical corrections, which do not add new subject matter. Further, Applicants are not acquiescing to the Examiner's statements as to the applicability of the prior art of record to the pending claims by filing the instant responsive amendments.

In view of the following discussion, the Applicants submit that none of the claims now pending in the application are obvious under the provisions of 35 U.S.C. §103. Thus, the Applicants believe that all of these claims are now in allowable form.

REJECTIONS

35 U.S.C. §103

A. Claims 1-3 and 9-10

The Examiner has rejected claims 1-3 and 9-10 under 35 U.S.C. §103(a) as being unpatentable over the Asamizuya et al. patent (U.S. Patent No. 6,314,576, issued November 6, 2002, hereinafter "Asamizuya") in view of the Liu et al. patent (U.S. Patent No. 5,970,233, issued October 19, 1999, hereinafter "Liu") and the Russo et al. patent (U.S. Patent No. 5,701,383, issued December 23, 1997, hereinafter "Russo"). The Applicants respectfully traverse the rejection.

The Applicants' invention in claim 1 (and similarly in claim 9) recites:

> "Apparatus for providing demand television comprising:
> a broadcast encoder for encoding a video frame sequence to form a broadcast bitstream;
> a storage encoder for encoding the video frame sequence to form a storage bitstream;
> a transmission system for transmitting the broadcast bitstream to subscriber equipment;

a storage device for storing the storage bitstream, wherein the storage device stores the storage bitstream at the same time that the transmission system transmits the broadcast bitstream; and

wherein said storage bitstream contains a plurality of bitstream types including at least a play bitstream and a fast forward bitstream, and said fast forward bitstream contains an indicator that delimits the end of available data such that a transition from said fast forward bitstream to at least one of said broadcast bitstream and said play bitstream is appropriate." (emphasis added).

The test under 35 U.S.C. §103 is not whether an improvement or a use set forth in a patent would have been obvious or non-obvious; rather the test is whether the claimed invention, considered as a whole, would have been obvious. Jones v. Hardy, 110 U.S.P.Q. 1021, 1024 (Fed. Cir. 1984) (emphasis added). The Applicants submit that none of the references, either singularly or in combination, teach or suggest the Applicants' invention as a whole.

In particular, the Asamizuya reference discloses that a near video-on-demand (NVOD) compilation unit edits and compresses film stock such as video film or video stock recorded on video tape, stores them for a long period, and transmits required video information to the near video-on-demand playout unit in accordance with the broadcast. The encoder compresses and encodes the video signals and audio signals for the film stock or the VTR stock input via the switching circuit based on the MPEG-2 standard. Accordingly, the signal after the encoder is a digital AV signal compressed and encoded by the MPEG-2 standard. The communication controller fetches a corresponding program stored in the archive storage 116 according to a request from the broadcast side and instruction from the NVOD playout unit, that is, the compilation system controller receiving an instruction for supply at the program supply side, and transmits the same via the communication path to the NVOD playout unit (see, Asamizuya, col. 8, lines 51-56, col. 9, lines 3-19, and col. 10, lines 41-48). As the Examiner concedes, nowhere in the Asamizuya reference is there any teaching or suggestion of the broadcast encoder and transmitting the bitstream at the same time as storing the bitstream.

Furthermore, the Liu reference fails to breach a substantial gap as between the Asamizuya reference and the Applicants' invention. In particular, the Liu reference

discloses that during encoding, host processor 116 reads the captured bitmaps from memory device 112 via high-speed memory interface 110 and generates an encoded video bitstream that represents the captured video data. Depending upon the particular encoding scheme implemented, host processor 116 applies a sequence of compression steps to reduce the amount of data used to represent the information in the video images. Many video compression schemes divide images into blocks of pixels for compression purposes. The resulting encoded video bitstream is then stored to memory device 112 via memory interface 110. Host processor 116 may copy the encoded video bitstream to mass storage device 120 for future playback and/or transmit the encoded video bitstream to transmit 118 for real-time transmission to a remote receiver (not shown in FIG. 1)

Nowhere in the new reference is there any teaching or suggestion of "wherein the storage device stores the storage bitstream at the same time that the transmission system transmits the broadcast stream." Rather, the new reference Liu teaches that the encoder applies a sequence of compression steps to reduce the amount of data used to represent the information, as conventionally learned in the art, and the resulting encoded video bitstream is stored to the memory device 112 via the memory interface 110. It is noted that for real-time encoding, the captured data is preferably stored to memory device 112, while for non real- time encoding, the captured data is preferably stored to the mass storage device 120 (see, Liu, col. 3, lines 15-19).

As noted above, the host processor may copy the encoded video bitstream to the mass storage device for future playback and/or transmit the encoded video bitstream to the transmitter for real time transmission to the remote receiver. It is further noted that the host processor may either copy the encoded video bitstream to the mass storage device 120 and/or transmit the encoded video bitstream to the transmitter, once the encoded video bitstream has been stored in memory 112 via memory interface 110. That is, the optional copying of the encoded video bitstream or transmission of the video bitstream only occurs after the video bitstream was previously stored elsewhere.

Furthermore, the Liu reference is completely silent with respect to whether the subsequent copying of the video bitstream to the mass storage device 120 and transmitting of the video bitstream and subsequent transmitting of the video bitstream to

the transmitter 118 occur contemporaneously. In other words, the Liu reference merely discloses that the host processor may (i) copy the encoded video bitstream to the mass storage device, or (ii) transmit the encoded video bitstream to the transmitter 118, or (iii) copy the encoded video bitstream to the mass storage device and transmit the encoded video bitstream to the transmitter. However, in the latter case, nowhere is there any teaching or suggestion that the copying and transmitting of the encoded video bitstream occurs at the same time (i.e., contemporaneously). Since the Liu reference fails to teach or suggest that the copying and transmitting of the encoded video bitstream occurs at the same time, the Liu reference fails to teach or suggest the Applicants' invention as a whole.

Further, the Russo reference fails to bridge a substantial gap as between the Asamizuya and the Liu reference with respect to the Applicants' invention. In particular, the Russo reference discloses "if a time-shifted version of the program is being output for any reason, a FAST FORWARD command may be entered, in which case playback is speeded up until deactivation of the command, at which time normal playback resumes, resulting in the output of the program exhibiting a reduced time shift, including a zero time shift in the event the operator "catches up" with the incoming program as it is being received (see, Russo, col. 3, lines 31-38). However, nowhere in the Russo reference is there any teaching or suggestion of "wherein the storage device stores the storage bitstream at the same time that the transmission system transmits the broadcast bitstream."

Even if the three references could somehow be operably combined, the references would merely disclose the encoding of video frame sequence to form a storage bitstream, which is then stored in a memory device, copying and/or transmitting the stored encoded video bitstream respectively to another storage device or to a transmitter, and switching between trick play and normal playback. However, nowhere in the three references is there any teaching or suggestion that "the storage device stores the storage bitstream at the same time that the transmission system transmits the broadcast bitstream."

The references must be taken in their entireties, including those portions which argue against obviousness. Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 230

U.S.P.Q. 416, 420 Fed. Cir. 1986). It is impermissible within the framework of the 35 U.S.C. § 103 to pick and choose from a reference only so much of it as will support a conclusion of obviousness to the exclusion of other parts necessary to a full appreciation of what the reference fairly suggests to one skilled in the art. Id. at 419. Moreover, the invention as a whole is not restricted to the specific subject matter claimed, but also embraces its properties and the problem it solves. In re Wright, 6 USPQ 2d 1959, 1961 (Fed. Cir. 1988) (emphasis added).

In this instance, the Applicant's have solved the problem of providing, in a VOD system, near real-time availability of fast forward and fast reverse functions and real-time availability of high bit rate video bitstream that, when decoded, produces a play sequence. The Applicants have solved this problem by including a step where the storage device stores the storage bitstream at the same time that the transmission system transmits the broadcast bitstream. None of the references, either singularly or in combination, teach or suggest storing the storage bitstream at the same time that the transmission system transmits the broadcast bitstream. Therefore, the combined references fail to teach or suggest the Applicants' invention as a whole.

As such, the Applicants submit that independent claim 1 (and similarly independent claim 9) is not obvious and fully satisfies the requirements under 35 U.S.C. §103 and is patentable thereunder. Furthermore, claims 2-3 and 10 respectively depend from independent claims 1 and 9 and recite additional features thereof. As such, and at least for the same reasons as discussed above, the Applicant submits that these dependent claims are also not obvious and fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder. Therefore, the Applicants respectfully request that the rejections be withdrawn.

B. Claims 4, 11 and 16-18

The Examiner has rejected claims 4, 11 and 16-18 under 35 U.S.C. §103(a) as being unpatentable over Asamizuya and Liu, and Russo in view of Lee (U.S. Patent No. 5,771,335, issued June 23, 1998, hereinafter "Lee"). The Applicants respectfully traverse the rejection.

Claims 4, 11, and 16 respectively depend from independent claims 1 and 9 and recite additional features thereof. For example, dependent claim 4, when combined with the base claim 1, recites:

> Apparatus for providing demand television comprising:
> a broadcast encoder for encoding a video frame sequence to form a broadcast bitstream;
> a storage encoder for encoding the video frame sequence to form a storage bitstream;
> a transmission system for transmitting the broadcast bitstream to subscriber equipment;
> a storage device for storing the storage bitstream, wherein the storage device stores the storage bitstream at the same time that the transmission system transmits the broadcast bitstream;
> wherein said storage bitstream contains a plurality of bitstream types including at least a play bitstream and a fast forward bitstream, and said fast forward bitstream contains an indicator that delimits the end of available data such that a transition from said fast forward bitstream to at least one of said broadcast bitstream and said play bitstream is appropriate; and
> wherein said storage bitstream contains play and trick play bitstreams. (emphasis added).

As discussed above, the combination of Asamizuya, Liu, and Russo merely disclose the encoding of video frame sequence to form a storage bitstream, which is then stored in a memory device, copying and/or transmitting the stored encoded video bitstream respectively to another storage device or to a transmitter, and switching between trick play and normal playback. However, nowhere in these three references is there any teaching or suggestion that "the storage device stores the storage bitstream at the same time that the transmission system transmits the broadcast bitstream."

Furthermore, the Lee reference fails to bridge the substantial gap as between the Asamizuya, Liu, and Russo references and the Applicants' invention. In particular, the Lee reference discloses fast forward and reverses in a VOD system (see, Lee, Abstract). Nowhere in the Lee reference is there any teaching or suggestion of "the storage device storing the storage bitstream at the same time that the transmission system submits the broadcast bitstream."

Even if the four references could be somehow operably combined, the references would merely disclose the encoding of video frame sequence to form a

storage bitstream, which is then stored in a memory device, copying and/or transmitting the stored encoded video bitstream respectively to another storage device or to a transmitter, and switching between trick play (fast forward and rewind features) and normal playback. However, nowhere in the four references is there any teaching or suggestion that "the storage device stores the storage bitstream at the same time that the transmission system transmits the broadcast bitstream." Therefore, the four references fail to teach or suggest the Applicants' invention as a whole.

As such, the Applicants submit that claims 4, 11, and 16-18 are not obvious and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, the Applicants respectfully request that the rejection of claims 4, 11, and 16-18 be withdrawn.

C. Claims 5-8 and 12-14

The Examiner has rejected claims 5-8 and 12-14 under 35 U.S.C. §103(a) as being unpatentable over Asamizuya, Liu and Russo in view of PCT WO 96/13121 to McLaren (hereinafter "McLaren"). The Applicants respectfully traverse the rejection.

Claims 5-8 and 12-14 depend from independent claims 1 and 9 and recite additional features thereof. As discussed above, the combination of Asamizuya, Liu, and Russo merely disclose the encoding of video frame sequence to form a storage bitstream, which is then stored in a memory device, copying and/or transmitting the stored encoded video bitstream respectively to another storage device or to a transmitter, and switching between trick play and normal playback. However, nowhere in the three references is there any teaching or suggestion that "the storage device stores the storage bitstream at the same time that the transmission system transmits the broadcast bitstream." Furthermore, the McLaren reference fails to bridge the substantial gap as between the Asamizuya, Liu, and Russo references and the Applicants' invention. In particular, the McLaren reference teaches a first encoder for encoding original HDTV video information, and a plurality of secondary encoders for respectively encoding subsampled video signals at various rates (see, McLaren, FIG. 4). However, nowhere in the McLaren is there any teaching or suggestion of "the

storage device storing the storage bitstream at the same time that the transmission system submits the broadcast bitstream."

Even if the four references could be somehow operably combined, the references would merely disclose the encoding of video frame sequence to form a storage bitstream, which is then stored in a memory device, copying and/or transmitting the stored encoded video bitstream respectively to another storage device or to a transmitter and switching between trick play and normal playback. However, nowhere in the four references is there any teaching or suggestion that "the storage device stores the storage bitstream at the same time that the transmission system transmits the broadcast bitstream." Therefore, the four references fail to teach or suggest the Applicants' invention as a whole.

As such, the Applicants submit that claims 5-8 and 12-14 are not obvious and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, the Applicants respectfully request that the rejection of claims 5-8 and 12-14 be withdrawn.

D. Claims 19, 23-25, and 27

The Examiner has rejected claims 19, 23-25 and 27 under 35 U.S.C. §103 as being unpatentable over the Asamizuya et al. patent (U.S. Patent No. 6,314,576, issued November 6, 2002) in view of the Enokida et al. patent (U.S. Patent No. 5,818,537, issued October 6, 1998, hereinafter "Enokida") and Russo. The Applicants respectfully traverse the rejection.

The Applicants' invention in claim 19 (and similarly independent claims 23 and 24) recites:

> "A method for providing demand television comprising the steps of:
> encoding, in real-time via a first encoder, a broadcast video frame sequence to form a broadcast bitstream, while contemporaneously encoding, via a second encoder, the broadcast video frame sequence to form a storage bitstream;
> broadcasting the broadcast bitstream to subscriber equipment;
> storing the storage bitstream within a storage device;
> upon a subscriber selecting to view information previously broadcast by the broadcast bitstream, transmitting to the subscriber the storage bitstream; and

upon a request from a subscriber, switching from decoding said storage bitstream to decoding said broadcast bitstream." (emphasis added).

The test under 35 U.S.C. §103 is not whether an improvement or a use set forth in a patent would have been obvious or non-obvious; rather the test is whether the claimed invention, considered as a whole, would have been obvious. Jones v. Hardy, 110 U.S.P.Q. 1021, 1024 (Fed. Cir. 1984) (emphasis added). None of the references, either singly or in combination, teach or suggest the Applicants' invention as a whole.

As discussed above and the Examiner concedes, the Asamizuya reference fails to teach or suggest "encoding, in real-time, via a first encoder, a broadcast video frame sequence to form a broadcast bitstream, while contemporaneously encoding, via a second encoder, the broadcast video frame sequence to form a storage bitstream." Rather, the Asamizuya reference discloses that a near video-on-demand (NVOD) compilation unit edits and compresses film stock such as video film or video stock recorded on video tape, stores them for a long period, and transmits required video information to the near video-on-demand playout unit in accordance with the broadcast. The encoder compresses and encodes the video signals and audio signals for the film stock or the VTR stock input via the switching circuit based on the MPEG-2 standard. Accordingly, the signal after the encoder is a digital AV signal compressed and encoded by the MPEG-2 standard. The communication controller fetches a corresponding program stored in the archive storage 116 according to a request from the broadcast side and instruction from the NVOD playout unit, that is, the compilation system controller receiving an instruction for supply at the program supply side, and transmits the same via the communication path to the NVOD playout unit (see, Asamizuya, col. 8, lines 51-56, col. 9, lines 3-19, and col. 10, lines 41-48). Nowhere is there any teaching or suggestion in the Asamizuya reference of "encoding, in real time via a first encoder, a broadcast video frame sequence to form a broadcast bitstream, while contemporaneously encoding, via a second encoder, the broadcast video frame sequence to form a storage bitstream."

Further, Enokida fails to bridge the substantial gap as between the Asamizuya reference and the Applicants' invention. Specifically, the Enokida reference discloses

performing a first encoding function to a digital motion image via a first encoder and storing the encoded digital motion image, then encoding a portion of the digital data encoded by the first encoder to produce a second encoded digital data stream. The encoded data produced by the second encoder is then transmitted to a receiving circuit (see Enokida, Col. 3, lines 36-56 and FIG. 1). That is, Enokida teaches encoding a previously encoded data stream. Referring to FIG. 1 of Enokida, the output of the first encoding circuit goes to the input of the second encoding circuit where the first encoded data is encoded for a second time prior to transmission.

By contrast, the Applicants' invention encodes, in real time via a first encoder, a broadcast video frame sequence to form a broadcast bitstream, while contemporaneously encoding, via a second encoder, the broadcast video frame sequence to form a storage bitstream. Referring to FIG. 2 of the Applicants' invention, the source video is split at the inputs of the first (real-time broadcast stream) encoder 250 and the second (storage) encoder 252. It is noted that the Applicants' invention does not encode, for a second time, the video information previously encoded by the first encoder. Rather, the Applicants' invention forms two steams by separately and contemporaneously encoding a common broadcast video frame sequence. Therefore, the Enokida reference fails to teach or suggest the Applicants' invention as a whole.

Even if the two references could somehow be operably combined, the combined references would merely teach encoding a video frame sequence to form a storage bitstream and encoding the video frame sequence a second time to produce a second video frame sequence for transmission to subscribers. However, neither of the references, either singularly or in combination, teach or suggest "encoding, in real time via a first encoder, a broadcast video frame sequence to form a broadcast bitstream, while contemporaneously encoding, via a second encoder, the broadcast video frame sequence to form a storage bitstream." Therefore the combined references fail to teach or suggest the Applicants' invention as a whole.

Moreover, the Russo reference also fails to bridge the substantial gap as between the combination of the Asamizuya reference and the Enokida reference and the Applicants' invention. Specifically, the Russo reference merely discloses:

"If a time-shifted version of the program is being output for any reason, a FAST FORWARD command may be entered, in which case playback is speeded up until deactivation of the command, at which time normal playback resumes, resulting in the output of the program exhibiting a reduced time shift, including a zero time shift in the event the operator "catches up" with the incoming program as it is being received." (See Russo, column 3, lines 31-38.)

Nowhere in the Russo reference is there any teaching or suggestion of "encoding, in real-time, via a first encoder, a broadcast video frame sequence to form a broadcast bitstream, while contemporaneously encoding, via a second encoder, the broadcast video frame sequence to form a storage bitstream." Moreover, even if the three references could somehow be operably combined, the combination would still fail to teach or suggest the invention as a whole. Specifically, the combination would merely disclose encoding video and audio signals based on an MPEG-2 standard, copying the encoded AV signals, storing the copied encoded AV signals to a mass storage device, encoding the video and audio signals for a second time and then transmitting such twice encoded video and audio signals. Since none of the references, either singly or in combination, teach or suggest "encoding, in real-time, via a first encoder, a broadcast video frame sequence to form a broadcast bitstream, while contemporaneously encoding, via a second encoder, the broadcast video frame sequence to form a storage bitstream," these references fail to teach the Applicants' invention as a whole.

As such, the Applicants submit that claim 19 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Likewise, independent claims 23 and 24 recite similar limitations as recited in claim 19. As such and for at least the same reasons discussed above, the Applicants submit that these independent claims also fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Furthermore, claims 25-27 depend from independent claim 24 and recite additional features thereof. As such, and for at least the same reasons as discussed above, the Applicants also submit that these dependent claims are not obvious and also fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, the Applicants respectfully request that the rejections be withdrawn.

E. Claim 26

The Examiner has rejected claim 26 under 35 U.S.C. §103(a) as being unpatentable over Asamizuya, Enokida, and Russo in further view of Lee. The Applicants respectfully traverse the rejection.

Claim 26 depends from independent claim 23 and recites additional features thereof. Claim 26 recites in part:

> "encoding, in real-time, via a first encoder, a broadcast video frame sequence to form a broadcast bitstream, while contemporaneously encoding, via a second encoder, the broadcast video frame sequence to form a storage bitstream." (emphasis added).

As discussed above, none of these references, either singularly or in combination, teach or suggest encoding a broadcast video frame sequence via a first and second encoder, where the first and second encoders contemporaneously encode the broadcast video frame sequence to respectively form a broadcast bitstream and a storage bitstream. That is, none of the references teach or suggest "encoding, in real-time, via a first encoder, a broadcast video frame sequence to form a broadcast bitstream, while contemporaneously encoding, via a second encoder, the broadcast video frame sequence to form a storage bitstream." Therefore, the combined references fail to teach or suggest the Applicants' invention as a whole.

As such, the Applicants submit that claim 26 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Therefore, the Applicants respectfully request that the rejection of claim 26 be withdrawn.

Conclusion

The applicants believe that all of the claims presently in the application are in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Steven M. Hertzberg, Esq. or Eamon J. Wall, Esq. at (908) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

E J Wall

Eamon J. Wall, Attorney
Reg. No. 39,414

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CUSTOMER #26,291
MOSER PATTERSON & SHERIDAN, LLP
595 Shrewsbury Avenue, Suite 100
Shrewsbury, New Jersey 07702
732-530-9404 - Telephone
732-530-9808 - Facsimile